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ABSTRACT

A study is presented which assesses agricultural production in a Purchase Land area over a seven-year period and tries to identify certain socio-psychological and other variables which might be acting as constraints on farming behavior in terms of change. A survey was conducted of the whole population of 198 resident farm families; it included six questionnaires. Subjects covered included agricultural production and farm information, mass media contact, personal and family characteristics, social participation, extension contact, media exposure, farm practice adoption and farmers' opinions on farming and extension. The investigation confirmed that exposure to all sources of information correlated with farmer efficiency. Data analysis indicates that sound technology and well-organized extension and educational efforts coupled with financial assistance will increase farmer response to extension. (Author/CK)

ABSTRACT

M.Sc. THESIS - UNIVERSITY OF READING 1972

EXTENSION IN A RHODESIAN PURCHASE LAND AREAT. J. BEMBRIDGE

This study was inspired by the dearth of published information dealing with agricultural production and the effects on the farming population of many years extension in Purchase Land areas of Rhodesia. Previous studies have been largely economic in nature and mostly have ignored socio-psychological and cultural aspects. An attempt was made to study what were considered to be the more important aspects of the whole "system," that is, the passing of research information by extension staff through various media to farmers.

The main purpose of the study was to assess agricultural production trends in one such Purchase Land area over a seven-year period and to try to identify certain socio-psychological and other variables which might be acting as constraints on farming behaviour in terms of change. The farming population was studied with a view to gaining more insight into the norms and value systems of the people, as well as their attitude to aspects of agricultural production and extension relating to farming efficiency. Farming efficiency was measured in terms of unit yields of the main crop, maize. The study was also designed to identify opinion leaders and to examine the situation which dictates such leadership. Lastly, it was hoped that an enquiry into extension staff knowledge, organisation and efficiency and methods used in the area extension programme, would indicate where improvements could be made in extension strategy.

With the exception of a sample survey of sixty forms on radio listening and readership, the whole population of 198 resident farm families were included in the survey. Thirty-six operational hypotheses relating to farming efficiency and informal leadership were grouped under the general headings of socio-psychological, personal, sociological and socio-economic characteristics as well as communication variables. The survey was made over a period of ten months and included six questionnaires. Subjects covered included agricultural production and farm information, mass media contact, personal and family characteristics, social participation, extension contact, media exposure, farm practice adoption and farmers' opinions on farming and extension. Extension workers' knowledge of agriculture and extension and sociometric identification of informal leaders, information seekers and friendship patterns were also included. Qualitative reliability, interview procedure, data analysis and the statistical procedures which were used are discussed.

A brief background to land tenure and purchase land areas in Rhodesia, responsibility of government departments and agencies, theoretical background to the hypotheses formulated and a description of the area and people, including historical background and important customs and traditions, is given. It became apparent that extension personnel need to be more cognizant of the problems, needs, traditions and customs of the people they serve. They need to tap these sources of information and to use them when planning extension programmes.

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The finding that the yield of the major crop can be used as a suitable measure of farming excellence, provides a potentially useful tool for the evaluation of extension programmes by workers in Purchase Land areas. A general conclusion which can be drawn from analysis of data shows that, in general, there has been very little improvement in agricultural production. Average figures do, however, hide the achievements of a minority of farmers. In terms of farming efficiency highly significant differences between adopters and non-adopters of eight different practices were found, indicating that in this sense, the extension programme was moderately successful. Generally speaking, the pattern of production and economic activity provides only for the basic necessities of life. The data showed that there exists considerable inherent potential for increased production of food crops and a moderate potential for increased overall productivity in terms of cash crops and livestock production. Statistical evidence showed that the size of holding is not at present a limiting factor to improved efficiency.

An important factor emerging from the study was that the average family (14,8 persons), was far too large to be supported within a middle income group. The original aim of creating a prosperous "middle class" family in the area studied has not been successful. Despite this, the long term advantages of a system of freehold tenure still far outweigh the disadvantages of communal tenure in Rhodesia.

Adoption of improved practices and aspirations for farming improvement were found to be related to farming efficiency to a highly significant degree and also to each other. Economic knowledge, knowledge of farm costing and a favourable outlook on the future of farming are all related to farming efficiency and can be influenced by the extension worker.

Aspirations to serve the farming community were related to farming efficiency, implying that formal and informal leaders are more likely to emerge from progressive farmers. The traditionally high value placed on leisure was negatively related to farming efficiency.

Younger farmers who inherited farms from their fathers were significantly less efficient than original settlers, despite having a higher level of education. Other personal characteristics significantly related to farming efficiency were family size, having a previous trade or profession, non-farm experience and farming qualifications. Age, marital status and standard of education were found to have no significant relationship to farming efficiency. The level of education correlated with exposure to mass media, field day attendance, outside area visits, use of farm credit and a number of other variables, indicating its importance to other essential factors of progressive farming. Co-ordination of all educational inputs are necessary for sound development of a community.

A high standard of housing, membership of a world religion and of formal organisations, visits outside the area, employment of farm labour, use of farm credit and membership of the Shona as opposed to the Ndebele ethnic groups were all factors related to farming efficiency. Granting of freehold title was not related to farming efficiency. A decline in farming standards after granting of title was observed.

The investigation confirmed that exposure to all sources of information correlated with farming efficiency. The variables studied

were in turn, all related to each other, indicating that mass and inter-personal communication channels are complimentary in diffusing information related to farming efficiency. An encouraging finding was that farmers chose the extension worker as the preferred source of information over other sources. The impact of crop demonstrations on the farming community was influenced by geographical situation and leadership reinforcing each other.

Data presented showed that a cause-effect relationship to farming efficiency is a multi-variable phenomenon. All variables significantly related to farming efficiency were in turn related to some of the others in varying degrees. Multiple regression analysis showed that the most important variables were adoption of innovations, standard of housing, farm demonstrations, outside area visits, ethnic group and attendance at field days. All variables together explained 42,5 per cent of the variance of farming efficiency. Variables showing the most significant relationships to other variables were adoption of innovations, farming aspirations, education, housing standard, outside area visits, radio listening, readership, field day attendance and use of farm credit. All these factors serve as a guide to extension staff in selection of farmers with whom to work.

It can be inferred from the study that there is a two-step or multi-step flow of information and that opinion leaders could play a significant role in the acceptance of new ideas and techniques by farmers. Sociometric measurement can be fruitfully employed as a technique for identification of informal leaders, as well as for the efficient functioning of small farmer discussion groups.

There was a large degree of unanimity amongst the farmers as to who were informal leaders amongst them. Opinion leaders when compared to other leaders were characterised by:

- (1) considerably greater efficiency as farmers
- (2) a higher rate of adoption of innovations
- (3) greater farming aspirations
- (4) better farming qualifications
- (5) greater knowledge of farm costing
- (6) greater exposure to mass and interpersonal communication channels
- (7) visiting farms and research stations outside the area
- (8) a higher standard of housing and
- (9) the greater likelihood of more frequently being members of the co-operative society.

Findings show they do not differ much from other farmers with whom they interact in terms of other socio-psychological, personal, sociological and socio-economic characteristics studied.

Analysis of the data and information in this dissertation showed that sound technology, well organised extension and educational efforts and some form of financial assistance will enhance farmer response to extension. Farmers with certain characteristics are more likely to respond to extension than others. The implications of the findings of this study to the formulation of a sound strategy of extension based on an intensive selective approach are discussed in addition to staff organisation, motivation and management in accordance with findings from the behavioural sciences. The past many changes in function of Ministries and Departments, as well as lack of a co-ordinated policy were found to be strong contributory factors towards disappointing progress. Findings of the study have application in many other Purchase Land areas of Rhodesia.

R E P O R T

BEMBRIDGE, T.J. : EXTENSION IN A RHODESIAN PURCHASE LAND AREA 1972

(M.Sc Thesis, University of Reading)

"The main purpose of this study was to assess agricultural production trends in the area and then try to identify certain sociological, socio-psychological and other variables which might be acting as constraints on farming behaviour in terms of change. The aim was to study the population and gain some insight into the norms and value systems of the people and their attitudes to aspects of agricultural production and extension which relate to farming efficiency (measured in terms of unit yields of the main crop, maize) The study is also designed to identify opinion leaders and examine the situation which dictates such leadership, and finally to enquire into extension staff knowledge, organisation and efficiency as well as methods used in the area's extension programme, with a view to bringing about possible improvements in the situation". (P.52).

The total farming population of Gwatemba Purchase Area (198 farmers) was included in the survey.

Three general hypotheses were formulated :

1. That efficient farmers differ from less efficient ones in terms of various sociological, socio-psychological and other characteristics. And that there are important relationships between the independent variables.
2. That opinion leaders exist in the area and that these differ in various characteristics from other farmers in relation to selected variables shown in the first general hypothesis.
3. That a strategy of extension based on these findings will result in more effective and more rapid change.
(p. 52 - 54).

Six questionnaires were used:

1. Agricultural production and farm information.
2. Readership/Radio listening sample survey.
3. Personal and family characteristics, social participation extension contact, media exposure and practice adoption.
4. Farmers view on farming and extension.
5. Extension workers' knowledge of agriculture and extension.
6. Sociometric identification of informal leaders, information seekers and friendship patterns.

FIRST HYPOTHESIS

The following thirty-seven variables were divided into four categories and each tested for relationship with farming efficiency.

SOCIO-PSYCHOLOGICAL CHARACTERISTICS

1. Adoption of innovations.
2. Farming aspirations.
3. Community aspirations.
4. Home improvement aspirations.
5. Perceived farm profitability.

6. Economic knowledge.
7. Knowledge of costs.
8. Outlook on farming future.
9. Outlook on leisure.
10. Perceived value of Extension service.

PERSONAL CHARACTERISTICS

11. Generation of farmer.
12. Age of farmer.
13. Family size.
14. Farmer's education.
15. Wives education.
16. Marital Status.
17. Farming qualifications.
18. Trade or profession.
19. Non-farming experience.

SOCIOLOGICAL AND SOCIO-ECONOMIC CHARACTERISTICS

20. Ethnic group.
21. Religious organisation.
22. Farmers Association membership.
23. Co-operative Society membership.
24. Co-operative Society Committee membership.
25. Wives membership of Womens Club.
26. Land Tenure status.
27. Housing standard.
28. Employers of labour.
29. Use of farm credit.
30. Outside area visiting.

COMMUNICATION

31. Extension contact.
32. Farm demonstrations.
33. Farmers meeting attendance.
34. Field Day attendance.
35. Readership of farm publications.
36. Radio ownership.
37. Radio listening to farming broadcasts.

Ten of these variables were found to have no significant positive relationship with farming efficiency :

Home improvement aspirations.
Perceived farm profitability.
Perceived value of extension service.
Farmers Association Committee membership.
Land Tenure status.
Age of farmer.
Farmer's education.
Wives education.
Marital status.
Non-farm experience.

Multiple Regression analysis revealed the following six variables to be most significantly related to farming efficiency :

Adoption of innovations.
Standard of housing.
Farming demonstration.
Outside area visits.
Ethnic Group (membership of Shona/other tribe).
Attendance at field days.

The general hypothesis that farming efficiency was related to certain characteristics was proved true, and the particular variables influencing farming efficiency were identified.

The sub-hypothesis based on the general one that these variables related to each other, was also accepted. The following twenty were tested :

1. Farming aspirations.
2. Housing standard.
3. Radio listening.
4. Adoption of innovations.
5. Outside area visits.
6. Field day attendance.
7. Educational standard.
8. Readership survey.
9. Use of farm credit.
10. Co-op Society Committee.
11. Extension contact.
12. Farmers' Association Committee.
13. Ethnic Group.
14. Knowledge of costs.
15. Favourable outlook on farming.
16. Non-farming experience.
17. Leisure preference.
18. Community aspirations.
19. Value of Extension service.
20. Age of farmer (Negative relationship).

The variables are arranged above in order of importance, i.e. the first, farming aspirations, is the variable having the most important relationship with the other variables, in terms of both number and degree of significance. Fig. 18 page 132 gives a matrix diagram of the relationships and should be referred to for an analysis of the inter-relationships of the twenty variables.

Even a cursory glance at the above data reveals several intriguing phenomena, e.g.

1. Adoption of innovations, while being the variable most significantly related to farming efficiency, ranks fourth in significance in the inter-relationships of the variables.
2. Farming aspirations, most significant of the inter-related variables, is not one of the most significant variables related to farmers' efficiency, and in fact the TABLE 28 Pg. 109 (Multiple Regression Analysis) ranks it ninth in significance, although with a significance level of .001 (table 24 page 102) it was one of the most significant of the socio-psychological aspirations influencing farming efficiency.
3. Education standard, the seventh most important inter-related variable, showed no significant relationship with farming efficiency, while it ranks tenth in the Multiple Regression analysis on page 109.
4. Home Improvement Aspirations revealed no significant relationship with farming efficiency, while Housing Standard was highly significantly related to farming efficiency, and was the second most important inter-related variable.

SECOND HYPOTHESIS

A sociometric survey established that informal local leadership did exist in the area. 138 respondents out of the total 198 nominated :

1. up to four farmers whom they sought for advice on crop production.
2. up to four farmers who they sought for advice on livestock production.
3. up to three farmers whom they considered to be the best farmers in the area, and gave reasons for their choice.
4. up to three farmers who were their best friends in the area.
5. up to three farmers who ask for and accept the advice of extension workers in the area.

Farmers who received a minimum of 5 nominations in at least one of the first three categories were accepted as informal leaders, and nineteen farmers qualified. Figures 20 - 22, pages 137 - 139 provide sociometric maps of those receiving 5 or more nominations in the three categories.

Best farmer scores were related to farming efficiency - Multiple Regression Analysis - TABLE 53 page 142 - and proved to be a "useful predictor of farming efficiency".

Testing the sub-hypothesis revealed the following characteristics to be significantly related to informal leadership :

(Tables 55 - 57, pages 143 - 147).

SOCIO-PSYCHOLOGICAL

Adoptions of Innovations
Farming aspirations.
Knowledge of costs.
Outlook of leisure.

PERSONAL

AGE (50 - 69 years Group; average 64 years)
Farming qualification.

SOCIOLOGICAL AND SOCIO-ECONOMIC

Employers of labour.
Housing standard.
Outside area visiting.

COMMUNICATION

Farm demonstration.
Extension contact.
Radio listening.
Field day attendance.

Leaders were also shown to have a significantly greater adoption of important farm practices (TABLE 59, page 149), and were considerably more efficient farmers (TABLE 60, page 150) than non-leaders.

THIRD HYPOTHESIS

The author states, at the end of Chapter 11 : "Finding of this chapter as well as earlier chapters justify the acceptance of this hypothesis". Chapter 11 "deals with farmers' outlook and opinions on the extension service and considers aspects of agriculture and communication referred to in previous chapters. The knowledge and effectiveness of extension staff is also discussed" (P.152).

Briefly, the following findings are dealt with:

1. FARMERS' OUTLOOK ON EXTENSION

91% of respondents said they had no use for the extension service. Functions of extension staff were perceived, on first opinion, by 48% to be advisory and by 36% to be servicing (Pegging, etc.).

2. FARMING ASPIRATIONS

56% had aspirations to improve their farming. 28% of these were doing something positive to realise their aspirations.

3. FARMER OPINION ON USES OF CATTLE

Largely traditional economic functions, but a small percentage did consider cattle to be a money making enterprise.

4. FARMER OPINION ON USES OF CAPITAL

79% wished to invest money in their farms.

5. USE OF FARM CREDIT

40% made use of credit facilities, of whom one in ten denied that it had improved profitability. The reasons given for not borrowing reflected the respondents low level of efficiency, while 25,6% said they did not borrow because of sufficient personal funds available.

6. FARMER OPINION ON COMMUNICATION

Individual visits from extension staff were considered overwhelmingly (60% first choice, 40% second choice) to be the best way of improving knowledge, although only a low percentage of farmers considered crop demonstrations and field days to be of any use, 80% of the most efficient farmers either had demonstration plots and were near neighbours to demonstration farms.

7. STAFF EVALUATION

Education level of extension staff was mostly primary education plus two years at a Government Agricultural Training School. They "had little general idea on extension or extension methods", their perception of their job function was that of a servicing one - an undoubted impediment.

They were concentrating on better farmers. There were significant differences between individual workers' areas - this could be explained in terms of characteristics already shown to be related to farming efficiency.

The Author concludes that the findings summarised above suggest the validity of his third hypothesis.

Some of the author's conclusions and recommendations :

1. Extension staff "need to be more cognizant of the problems, needs, traditions and customs of the people they serve" when planning extension programmes.
2. Yield of major crop can be used as a measurement of farming excellence.
3. The use of improved seed was the most widely adopted innovation.
4. Size of holding is not a limiting factor to improved farming efficiency, but low managerial ability and poor production methods are.
5. Population increase presents a serious problem.
6. "The long-term advantages of free-hold tenure still far outweigh the disadvantages of communal tenure in the Tribal Trustlands of Rhodesia".
7. "Adoption of farm practices and aspirations to improve farming standards are the variables most significantly related to farming efficiency".
8. The finding that farmers who have inherited their farms are less efficient than original settlers has important implications.
9. The superiority of farmers with a trade or profession, agricultural qualification and non-farm experience is an important factor in the selection of farmers.
10. Education does not have a direct influence on farming efficiency, but does have important relationships with other, significant influences.
11. Education in rural areas does "not instil aspirations for higher living nor equip people for life in a rural environment".
12. the relationship between membership of a world religion and farming efficiency suggests the possibility of extension workers exploiting the traditional power of the churches
13. Important for extension staff to work through farming organisations.
14. Visits outside the area important in planning extension programme.
15. Credit should only be given to farmers who have demonstrated their farming ability.
16. Farming standards have in many cases declined since the granting of title - implies a rethinking on land tenure necessary. Possibly long-term leases with productivity clauses.

17. Extension planners should take into account the differences between the main ethnic groups; the tendency to be grouped in a geographical pattern will affect communications.
18. Farmers chose extension worker as the most preferred source of communication.
19. No single variable is sufficient to explain farming efficiency. All the variables together explained 42,5% of the variance of farming efficiency, which highlights the need for further research.
20. Opinion leaders could play a significant role in the acceptance of innovations.
21. Sociometric measurement can be employed to identify informal leaders, as well as the efficient functioning of small farmer groups along discussion lines.
22. Opinion leaders tend to conform to the norms of the social system.
23. "sound technology, well organised extension and educational efforts and some form of selective financial assistance will enhance farmer response to extension".
24. Extension staff must be selective in choosing farmers with whom to work. These findings could form a guide to same.
25. Intensive personal contact with farmers is essential for progress beyond the awareness and interest stage.
26. Demonstrations should be directed at small groups rather than large field day used in the past.
27. Mass media can be effective if supplemented by personal contact.
28. Farmers and their families should be involved in programme planning.
29. "..... a carefully planned and organised approach to a selective type programme, will produce greater benefits for all rural people, than the somewhat haphazard approach in the past".
30. Extension staff :
 - (a) seems likely that a division of responsibility will result in a better performance.
 - (b) Detached nature of supervision impedes performance - need to be more 'persuasive' and less 'directive'.
 - (c) Each member needs a clear definition of his job, its relevance to other staff members, and his goals.
 - (d) Satisfactory performance should be rewarded with selection for promotion and training - incompetence with dismissal.

Administrative changes and lack of co-ordination are strong contributory factors to the disappointing progress. Overall responsibility for PA development should be vested in one Department or Ministry who should consider "provision of properly planned townships providing amenities and facilities for the functioning of an integrated community".